

# Cisco 7500 Series

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This chapter provides information on the Cisco 7500 series routers. The information is organized into the following sections:

- Product Overview
- Standard Features
- Options
  - Route Switch Processors
  - Interface Processors
  - Spare Chassis
  - Power Supplies
  - Spare Accessories
  - Software Options

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**Note** Documentation for the Cisco 7500 series is available in two forms: on a CD-ROM called Cisco Connection Documentation, Enterprise Series (formerly called UniverCD) and printed books. You can request a free copy of the documentation CD when you place an order and have the option of subscribing to a CD update service. Installation documentation ships with each chassis, and a configuration note ships with each component ordered. All configuration notes are available on the CD.

You can also access Cisco technical documentation on the World Wide Web URL <http://www.cisco.com>. For more information, see the chapter “Documentation” at the end of the catalog.

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## Product Overview

The Cisco 7500 series is Cisco's premier high-end platform of multiprotocol routers, which include the Cisco 7505, the Cisco 7507, and the Cisco 7513. These systems combine Cisco Systems' proven software technology with exceptional reliability, availability, serviceability, and performance features to meet the requirements of today's most mission-critical internetworks. The Cisco 7500 series provides information system professionals with the flexibility they need to meet the constantly changing requirements at the core and distribution points of the internetwork.

The Cisco 7505 features a high-speed Cisco Extended Bus (CyBus), and the Cisco 7507 and Cisco 7513 feature dual CyBuses. Network interfaces reside on modular interface processors, which provide a direct connection between the CyBus and the external network. The Cisco 7505 uses the RSP1, and the Cisco 7507 and Cisco 7513 use the RSP2.

The Cisco 7500 series runs the industry-leading networking software, Cisco Internetwork Operating System (Cisco IOS) software. Cisco IOS software assures robust, reliable internetworks by supporting both LAN and WAN protocols, optimizing WAN services, and controlling internetwork access. In addition, Cisco IOS software allows centralized, integrated, and automated installation and management of internetworks.

The Cisco 7500 series offers software feature sets and feature licenses, which allows you to select the package that best meets your needs. You can select from six feature sets, which can be enhanced with additional feature licenses. If requirements change in the future, you can upgrade to a higher level feature set and add another feature license.

The Cisco 7505 contains five slots (one slot for the RSP1, and four slots for interface processors); the Cisco 7507 contains seven slots (two slots for RSP2s, and five slots for interface processors); and the Cisco 7513 contains thirteen slots (two slots for RSP2s, and eleven slots for interface processors). The interface processor types follow:

- Asynchronous Transfer Mode (ATM) Interface Processor (AIP)\*
- Channel Interface Processor (CIP)
- Ethernet Interface Processor (EIP)\*
- Fast Ethernet Interface Processor (FEIP)
- FDDI Interface Processor (FIP)\*
- Fast Serial Interface Processor (FSIP)\*
- High-Speed Serial Interface (HSSI) Interface Processor (HIP)
- MultiChannel Interface Processor (MIP)
- Packet OC-3 Interface Processor (POSIP)
- Service Provider MultiChannel Interface Processor (SMIP)
- Standard Serial Interface Processor (SSIP)





- Token Ring Interface Processor (TRIP)
- Versatile Interface Processor (VIP)
- Second-Generation Versatile Interface Processor (VIP2)

\* Older versions of these boards may be eligible for the Investment Protection Program (IPP). See the chapter “Interface Processors and Port Adapters for the Cisco 7000 Family.”

The reliability, availability, and serviceability features of the Cisco 7500 series include the following:

- Online software reconfiguration—Enables software configuration changes to occur without rebooting or interrupting network applications and services.
- Online insertion and removal—Allows seamless upgrades to higher density and new interface processors without rebooting or taking the system offline. Reduces operator intervention because like interface processors are automatically reconfigured.
- Fast boot—Enables the system to come online quickly (35 seconds is typical) after software upgrades, minimizing impact on the network.
- Environmental monitoring—Alerts you to fluctuations before critical conditions occur, allowing proactive resolution while the system stays online.
- Self-diagnostics and tools—Ensures that modules are operational before going online, eliminating potential network problems.
- Optional dual power supply systems (for Cisco 7507 and Cisco 7513 only)—Extends individual power supplies by load sharing.

Allows you to implement dual sources of primary power. Each supply has its own power cord, eliminating the risks associated with failure of uninterruptable power supply systems or building power.

- Flash memory—Enables fast, reliable software and microcode updates. Allows a single, centralized point of administration, eliminating the need to visit each router site when updating software or microcode.

**Figure 3 Cisco 7505—Front View**

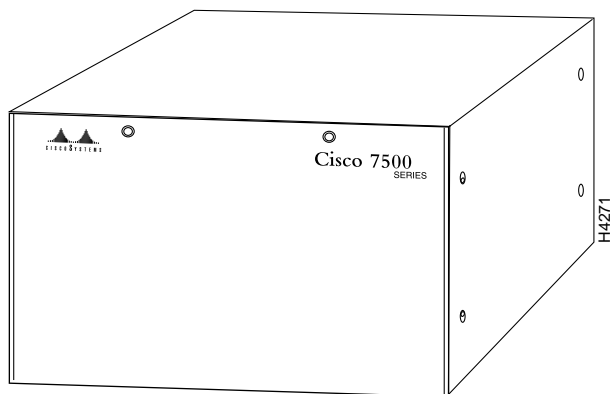


Figure 4 Cisco 7505—Interface Processor View

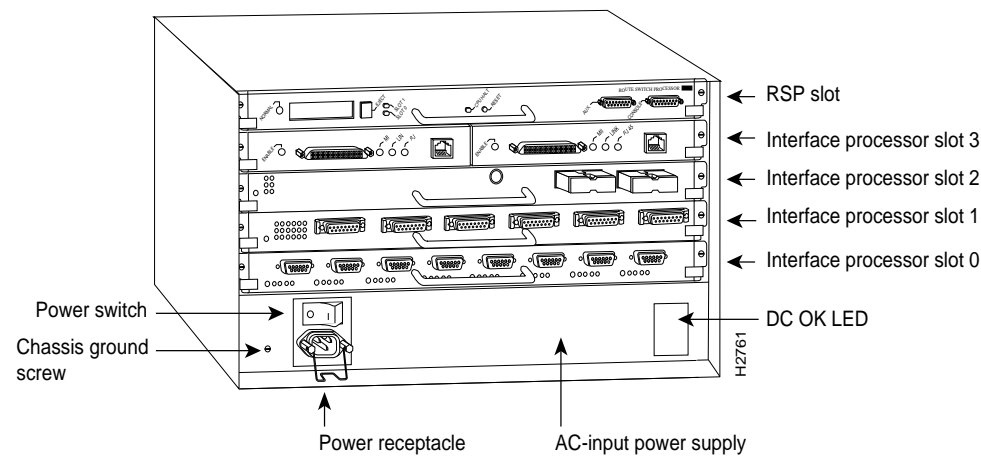
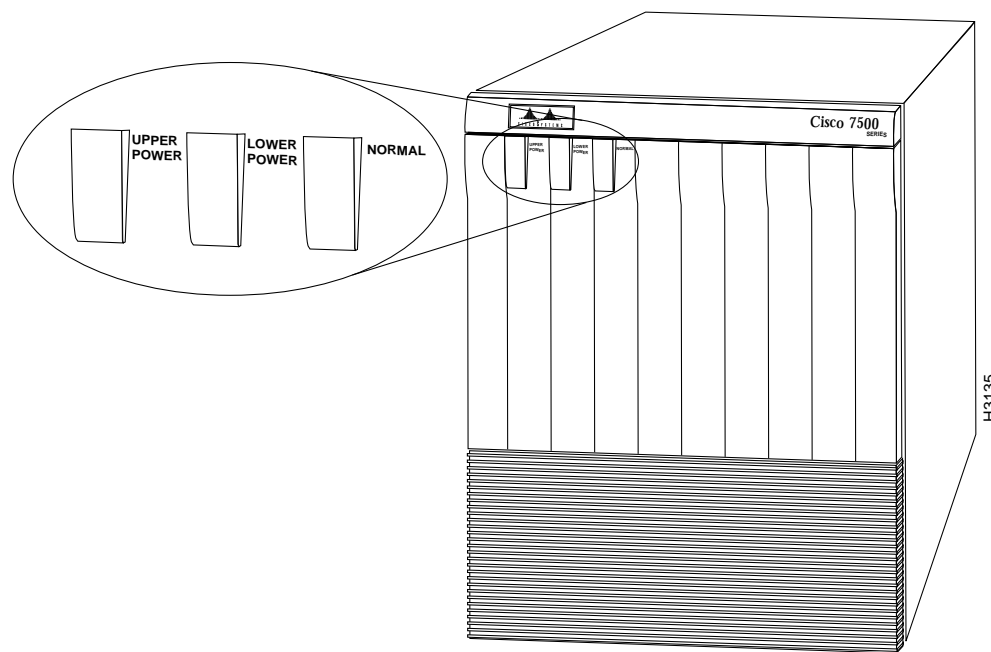


Figure 5 Cisco 7507—Front View



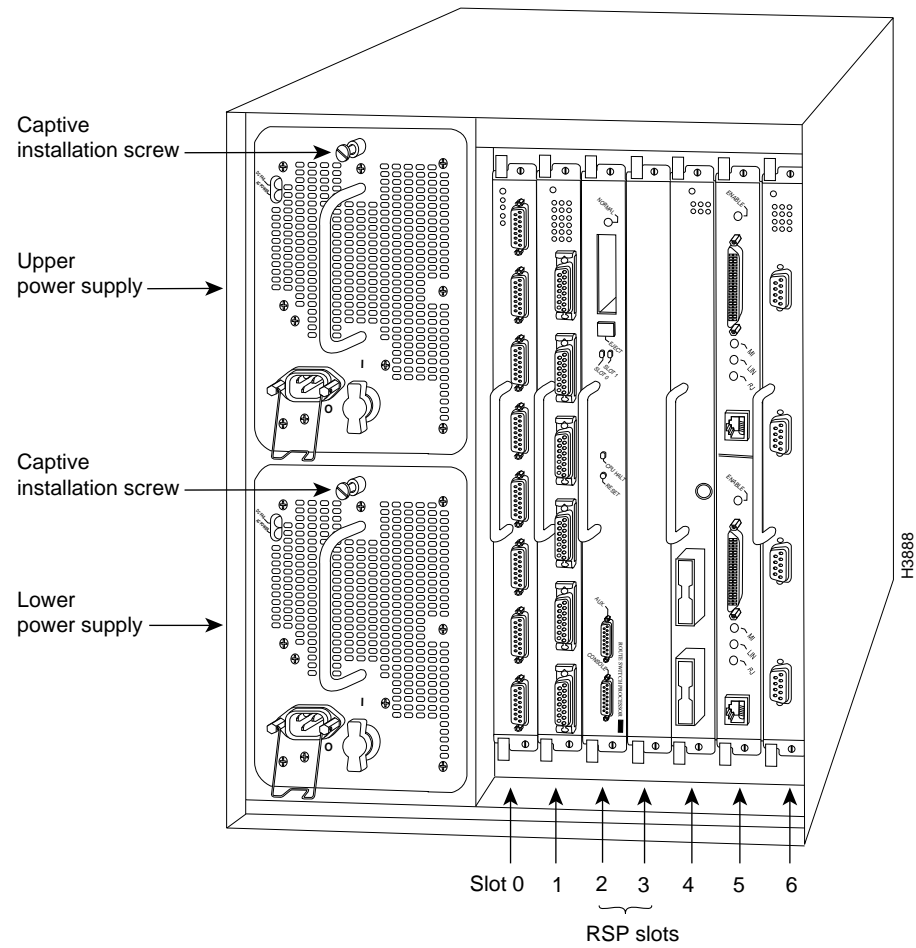
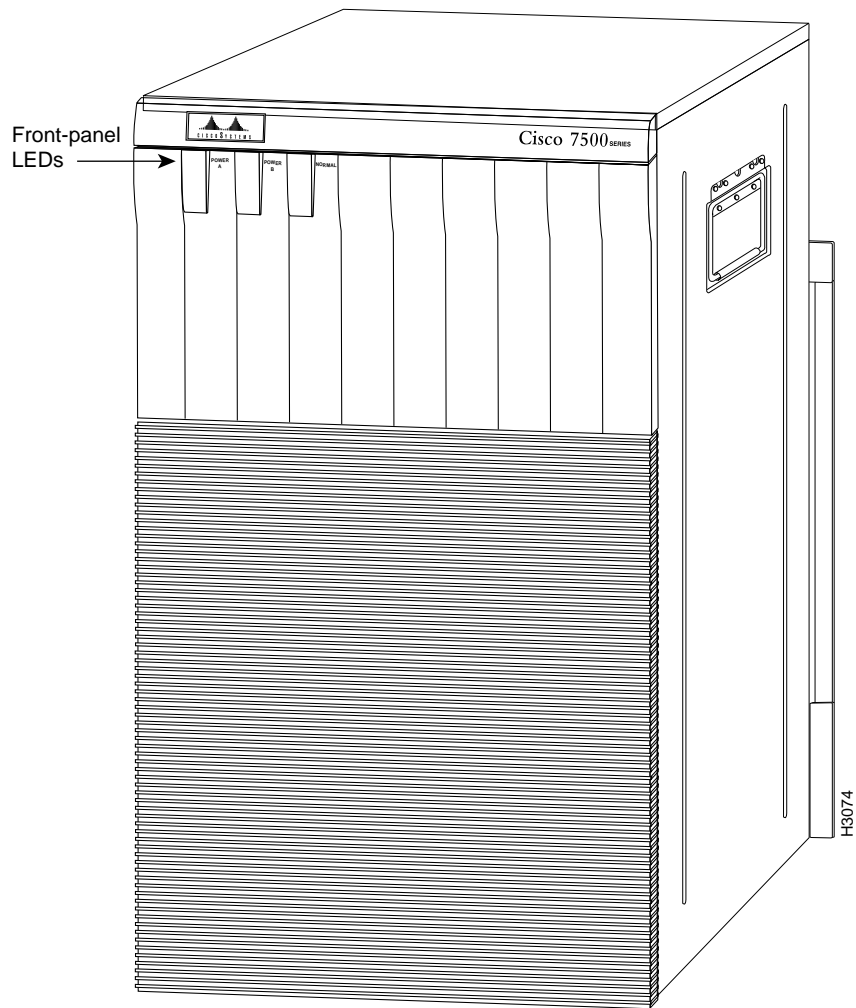
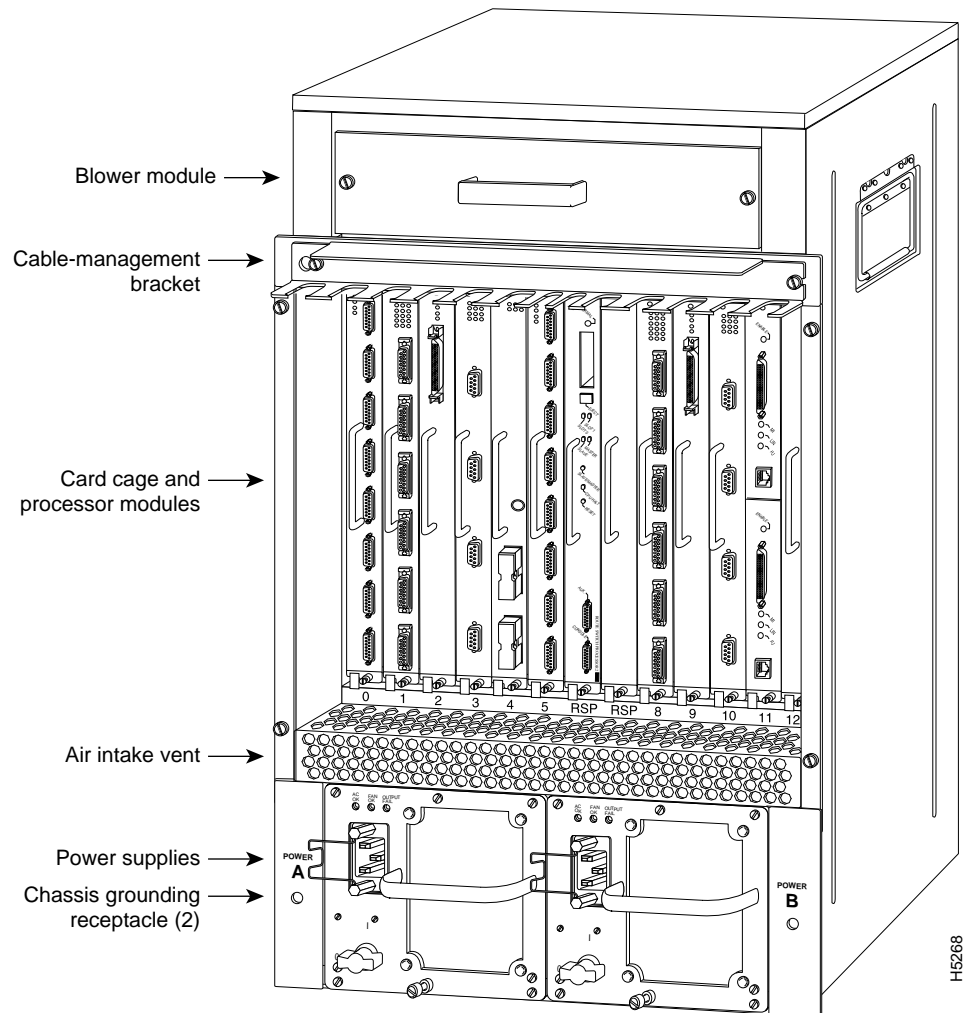
**Figure 6 Cisco 7507—Interface Processor View**

Figure 7 Cisco 7513—Front View



**Figure 8 Cisco 7513—Interface Processor View**

**Table 45 Cisco 7500 Series Summary of Features**

Characteristics	Cisco 7505	Cisco 7507	Cisco 7513
Supported network interfaces	Ethernet 10BaseT and AUI <sup>1</sup> Fast Ethernet (100BaseT and MII) Token Ring FDDI HSSI Serial ATM Multichannel on T1 or E1 lines ISDN PRI IBM channel	Ethernet 10BaseT and AUI <sup>1</sup> Fast Ethernet (100BaseT and MII) Token Ring FDDI HSSI Serial ATM Multichannel on T1 or E1 lines ISDN PRI IBM channel	Ethernet 10BaseT and AUI <sup>1</sup> Fast Ethernet (100BaseT and MII) Token Ring FDDI HSSI Serial ATM Multichannel on T1 or E1 lines ISDN PRI IBM channel
Power supplies	1	2 <sup>2</sup>	2 <sup>2</sup>
Interface processor slots	4	5	11
Software options—choice of six Cisco IOS software feature sets <sup>3</sup>	IP routing IP/IPX Routing and IBM IP/IPX Routing, IBM, and APPN Desktop and IBM Enterprise and IBM Enterprise, IBM and APPN	IP routing IP/IPX Routing and IBM IP/IPX Routing, IBM, and APPN Desktop and IBM Enterprise and IBM Enterprise, IBM and APPN	IP routing IP/IPX Routing and IBM IP/IPX Routing, IBM, and APPN Desktop and IBM Enterprise and IBM Enterprise, IBM and APPN
PCMCIA Flash memory card (optional, 2 slots available)	8 MB expandable to 40 MB (8, 16, or 20 MBs per card)	8 MB expandable to 40 MB (8, 16, or 20 MBs per card)	8 MB expandable to 40 MB (8, 16, or 20 MBs per card)
Processor type	MIPS RISC	MIPS RISC	MIPS RISC
Dimensions (H x W x D)	10.5 x 17.5 x 17.0" (26.67 x 44.45 x 43.18 cm) Chassis depth including power cord and cable management brackets is 19" (48.26 cm)	19.25 x 17.5 x 25.1" (48.90 x 44.45 x 63.75 cm) Chassis depth including power cable is 28" (71.12 cm)	33.75 x 17.5 x 22" (85.73 x 44.45 x 55.88 cm) Chassis width including rack-mount flanges is 18.93 in (48.1 cm) Chassis depth including power cord and cable management fixture is 24 in (60.96 cm)
Weight	Chassis only (including power supply and fan array): 46 lb (20.87 kg) Chassis fully configured with 1 RSP1 and 4 interface processors: 70 lb (31.75 kg)	Chassis only: 76 lb (34.47 kg) Chassis fully configured with 1 RSP2 and 5 interface processors, and 2 power supplies: 143.5 lb (64.63 kg)	Chassis with blower module: ~75 lbs (34.02 kg) Chassis with blower module and one power supply: ~100 lbs (45.36 kg) Chassis with blower module and two power supplies: ~125 lbs (56.7 kg) Chassis with blower module, two power supplies, and all slots filled: ~160 lbs (72.58 kg) Each processor module weighs ~2.5 lbs (1.13 kg)
High-speed backplane	5-slot, 1.067-gigabits per second (Gbps) CyBus: 4 interface processor slots, and 1 RSP1 slot	7-slot, 2 1.067-Gbps CyBuses: 5 interface processor slots, and 2 RSP2 slots	13-slot, 2 1.067-Gbps CyBuses: 11 interface processor slots, and 2 RSP2 slots

1. AUI = attachment unit interface.

2. Second power supply is optional.

3. Feature sets can be enhanced with VIP support, CIP support, and/or two feature licenses (WAN packet protocols and interdomain routing).



**Table 46 Cisco 7505 Environmental Specifications**

Description	Specification
Power dissipation	600W maximum configuration with AC-input power supply 600W maximum configuration with DC-input power supply
Heat dissipation	715W (2440 British thermal units [Btus]/hr)
Power distribution	75 amps (A) maximum @ +5 VDC <sup>1</sup> , 15A maximum @ +12 VDC, 3A maximum @ -12 VDC, 5A maximum @ +24 VDC
AC-input rating	100 to 240 volts AC (VAC <sup>2</sup> ), wide input with power factor corrector (PFC); 9A maximum @ 100 VAC, 4A maximum @ 240 VAC (at 600W)
Frequency	50 to 60 Hz
DC-input rating	-40 volts DC (VDC) minimum in North America (-56 VDC in European Community) -48 VDC nominal in North America (-60 VDC in European Community) -52 VDC maximum in North America (-72 VDC in European Community) 20A maximum @ -48 VDC, and 16A maximum @ -60 VDC
DC-input cable	10 AWG <sup>3</sup> ; recommended minimum wire gauge (customer provided)
DC-input hold-up time	10 milliseconds (ms) of output after the DC input has been interrupted
Airflow	Side-to-side through the chassis using a variable-speed, 6-fan array
Temperature	32 to 104 F (0 to 40 C), operating; -4 to 149 F (-20 to 65 C), nonoperating
Humidity (noncondensing)	10 to 90%
Agency approvals	Safety: UL 1950, CSA 22.2-No. 950, EN60950, EN41003, AUSTEL TS001, AS/NZS 3260, IEC 801-2, 3, 4, 5, and 6 EMI: FCC Class A, VCCI Class II, and CISPR 22 B (EN 55022) Conducted Emissions

1. VDC = volts direct current.

2. VAC = volts alternating current.

3. AWG = American Wire Gauge.

**Table 47 Cisco 7507 Environmental Specifications**

Description	Specifications
Power supply	700W maximum (AC-input and DC-input power supplies)
Power dissipation	626W maximum configuration, 530W typical with maximum configuration
Heat dissipation	1200W (4100 Btu/hr)
AC current rating	12A maximum @100 VAC <sup>1</sup> , 6A maximum @240 VAC with the chassis fully configured
Input voltage	100 to 240 VAC wide input with power factor corrector (PFC)
Frequency	50 to 60 Hz (hertz) autoranging
DC-input power	1000 watts (W)
DC-input voltage	-40 volts direct current (VDC <sup>2</sup> ) minimum -48 VDC nominal -72 VDC maximum
DC-input cable	8 AWG <sup>3</sup> wire (customer provided)
DC voltages supplied and steady state maximum current ratings	+5.2V @ 100 amps (A) +12V @ 15A -12V @ 3A +24V @ 5A

Description	Specifications
DC-input power supply hold-up time specification	10 milliseconds (ms) of output after the input has been interrupted
Airflow	140 cfm (cubic feet per minute) through the system blower
Temperature	32 to 104 F (0 to 40 C), operating; –4 to 149 F (–20 to 65 C), nonoperating
Humidity (noncondensing)	10 to 90%
Agency approvals	Safety: UL 1950, CSA 22.2-950, EN60950, EN41003, AUSTEL TS001, AS/NZS 3260 EMI: FCC Class A, EN55022 Class B, VCCI Class 2

1. VAC = volts alternating current.

2. VDC = volts direct current.

3. AWG = American Wire Gauge.

**Table 48 Cisco 7513 Environmental Specifications**

Description	Specification
Power dissipation	1200W with a maximum configuration and one AC-input power supply 1200W with a maximum configuration and one DC-input power supply 1700W nominal with a maximum configuration and two AC- or DC-input power supplies
Heat dissipation	1600W (5461 Btu/hr)
AC-input voltage and current	100 VAC <sup>1</sup> @ 16 amps (A) maximum <sup>2</sup> wide input with power factor correction (PFC) 240 VAC @ 7A maximum
Frequency	50 to 60 Hz
AC-input cable	12 AWG <sup>3</sup> , with three leads, an IEC-320 receptacle on the power supply end, and a country-dependent plug on the power source end
DC-input voltage and current	–48 VDC <sup>4</sup> nominal, at 35 amps (A) in North America (–60 VDC at 35A in the E.C.)
DC-input cable	8 AWG recommended minimum, with three conductors rated for at least 194 F (90 C) (customer provided)
DC voltages supplied and maximum, steady-state current (AC- and DC-input)	+5.2 VDC @ 75 A +12 VDC @ 15A –12 VDC @ 3A +24 VDC @ 5A
Airflow and noise level	Through chassis by variable-speed blower; 62 to 70 dBA
Temperature	32 to 104 F (0 to 40 C), operating; –4 to 149 F (–20 to 65 C), nonoperating
Humidity (noncondensing)	10 to 90%
Agency approvals	Safety: UL 1950, CSA 22.2-950, EN60950, EN41003, AUSTEL TS001, AS/NZS 3260 EMI: FCC Class A, EN60555-2, EN55022 Class B, VDE 0878 Part 3, 30 Class B Immunity: EN55101/2 (ESD), EN55101/3 (RFI), EN55101/4 (Burst), EN55101/5 (Surge), EN55101/6 (Conducted), IEC77B (AC Disturbance)

1. VAC = volts alternating current.

2. Each AC-input power supply operating at 120 VAC requires a dedicated 20A service and a 20A receptacle.

3. AWG = American Wire Gauge.

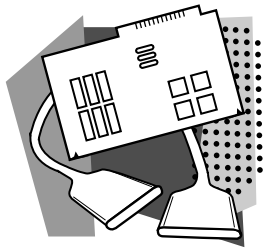
4. VDC = volts direct current.



## Standard Features

The Cisco 7500 series base system includes the following standard features:

- System chassis
- Route Switch Processor
  - MIPS RISC CPU, external clock speed of 50 MHz and an internal clock speed of 100 MHz
  - Console port (male EIA/TIA-232—default DCE mode)
  - Auxiliary port (EIA/TIA-232 DTE)
  - 16-MB DRAM default, upgradeable to 128 MB
  - 128-KB NVRAM
  - 8-MB Flash memory via PCMCIA Flash memory cards, upgradeable to 40 MB
  - Battery backup
  - Real-time calendar clock
- Four slots for interface processors for the Cisco 7505; five slots for interface processors for the Cisco 7507; eleven slots for interface processors for the Cisco 7513
- AC-input or DC-input power supplies
- Power cord (AC-input only)
- Y console and auxiliary cables
- Rack-mounting hardware
- Cable-management bracket (Cisco 7505 and Cisco 7513 only)



## Options

Options for the Cisco 7500 series include interface processors, memory, serial cables, software feature sets, software feature licenses, a second power supply (Cisco 7507 and 7513 only), accessories, and upgrades for the Route Switch Processor.

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**Note** For additional options that apply to most systems, refer to the chapters “Cables and Transceivers” or “Power Cords” in Part 7.

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## Route Switch Processors

The system requires at least one Route Switch Processor (RSP), which can be ordered in three ways: as part of an initial system, as a spare, or as an upgrade. The RSP can be ordered with your choice of 16-, 24-, 32-, 64-, or 128-MB DRAM and one or two Flash memory cards, which are available in 8-, 16-, or 20-MB densities. The price of an RSP includes 16 MB of DRAM and an 8-MB Flash memory card. For more information about the Flash memory card, see a later section “Flash Memory Cards.”

Table 49 lists RSP product numbers, and Table 50 lists RSP DRAM product numbers.

**Table 49 Cisco 7500 Series Route Switch Processors**

Description	Product Numbers
Cisco 7505 Route Switch Processor (installed in system)	RSP1
Cisco 7505 Route Switch Processor (spare)	RSP1= <sup>1</sup>
Cisco 7507 and Cisco 7513 Route Switch Processor (installed in system)	RSP2
Cisco 7507 and Cisco 7513 Route Switch Processor (spare)	RSP2= <sup>1</sup>
RSP2 spare console cable	CAB-RSP2CON=
RSP2 spare auxiliary cable	CAB-RSP2AUX2=

1. By default, spare processors ship with an 8-MB PCMCIA Flash memory card, which is unformatted and does not contain a Cisco IOS software image.

**Table 50 Cisco 7500 Series Route Switch Processor DRAMs**

Description	Product Numbers	SIMM Quantity	SIMM Size
8-MB DRAM (spare)	MEM-RSP-8M=	2	4-MB SIMMs
16-MB DRAM (default, shipped with RSP)	MEM-RSP-16M	2	8-MB SIMMs
16-MB DRAM (spare)	MEM-RSP-16M=	2	8-MB SIMMs
24-MB DRAM (installed in system)	MEM-RSP-24M	2 2	8-MB SIMMs 4-MB SIMMs
32-MB DRAM (installed in system)	MEM-RSP-32M	2	16-MB SIMMs
32-MB DRAM (spare)	MEM-RSP-32M=	2	16-MB SIMMs

Description	Product Numbers	SIMM Quantity	SIMM Size
64-MB DRAM (installed in system)	MEM-RSP-64M	2	32-MB SIMMs
64-MB DRAM (spare)	MEM-RSP-64M=	2	32-MB SIMMs
128-MB DRAM (installed in system)	MEM-RSP-128M	4	32-MB SIMMs
128-MB DRAM (spare)	MEM-RSP-128M=	4	32-MB SIMMs

## RSP1

The RSP1 is the main system processor module for the Cisco 7505. It combines all of the routing and high-speed switching functions of the separate Route Processor (RP) and Switch Processor (SP), which are used in Cisco 7000 series routers. Because the RSP1 combines the RP and SP functions, four slots are available for interface processors, allowing greater port density. The RSP1 contains the CPU and system memory components for the Cisco 7505.

Cisco IOS software images reside in Flash memory, which is located either on the RSP1, in the form of a single in-line memory module (SIMM), or on up to two Flash memory cards. Storing software images in Flash memory enables you to download and boot from upgraded images remotely. This eliminates the need for removal and replacement of ROM devices when updating software. For more information about the RSP1's Flash memory card, see a later section "Flash Memory Cards."

The RSP1 uses a software-controlled configuration register, so it is not necessary to remove the RSP1 to configure jumpers. There are no user-configurable jumpers on the RSP1.

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**Note** The RSP1 is only supported on the Cisco 7505.

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Table 51 summarizes the memory components of the RSP1.

**Table 51 Cisco 7500 Series RSP1 Memory Components**

Type	Size	Quantity	Description
DRAM	16 to 128 MB	2 to 4	8-, 16-, 24-, or 32-MB SIMMs (based on maximum DRAM required, user configurable)
NVRAM	128 KB	1	Nonvolatile EPROM for the system configuration file <sup>1</sup>
Flash SIMM	8 MB	1	Contains the Cisco IOS BOOT images on the RSP1 (standard)
Flash memory card	8, 16, and 20 MB <sup>2</sup>	Up to 2	Contains the Cisco IOS images on up to two PCMCIA cards (user configurable)
ROM monitor	256 KB	1	EPROM for the ROM monitor program

1. A system configuration file is contained in NVRAM, which allows the software to control several system variables.

2. Only Intel Series 2+ Flash memory cards can be used with the RSP1.

## RSP2

The RSP2 is the main system processor module for the Cisco 7507 and Cisco 7513. The RSP2 contains the system CPU and system memory components. It maintains and executes the management functions that control the system.

Cisco IOS images reside in Flash memory, which is located either on a SIMM on the RSP2 or on up to two Flash memory cards. Storing Cisco IOS images in Flash memory enables you to download and boot from upgraded images remotely. This eliminates removal and replacement of ROM devices for software updates. (For more information about the RSP2 Flash memory card, see the following section, “Flash Memory Cards.”)

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**Note** For the high system availability (HSA) feature to operate properly, you need Cisco IOS Release 11.1(2) or later and ROM monitor Version 11.1(2) or later. This Cisco IOS release and ROM version will enable the Cisco 7507 or Cisco 7513 to use the HSA feature, which supports two simultaneous RSP2s. One RSP2 operates as the system *master* and the other RSP2 operates as the system *slave*, which takes over if the master RSP2 fails. HSA is supported by any feature sets that support VIP.

Both RSP2s require the same ROM monitor version, the same Cisco IOS release (Cisco IOS Release 11.1(2) or later), and the same DRAM configuration. If you need to update your ROM monitor, order product number ROMMON-RSP2=.

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Table 52 summarizes memory components of the RSP2.

**Table 52 Cisco 7500 Series RSP2 Memory Components**

Type	Size	Quantity	Description
DRAM	16 to 128 MB	2 to 4	8-, 16-, 24-, or 32-MB SIMMs (based on maximum DRAM required, user configurable)
NVRAM	128 KB	1	Nonvolatile EPROM for the system configuration file <sup>1</sup>
Flash SIMM	8 MB	1	Contains the Cisco IOS BOOT images on the RSP2
Flash memory cards	8, 16, and 20 MB <sup>2</sup>	Up to 2	Contains the Cisco IOS images on up to two PCMCIA cards (user configurable)
ROM monitor	256 KB	1	EPROM for the ROM monitor program

1. A system configuration file is contained in NVRAM, which allows the software to control several system variables.

2. Per Flash memory card. Only Intel Series 2+ Flash memory cards can be used with the RSP1.

## Flash Memory Cards

Flash memory cards can be used to store and boot Cisco IOS images and/or system configurations. A Cisco 7500 series router can also be used as a TFTP server, with the Flash card memory used to store other files such as software and microcode images for other systems. Cisco recommends using one card for image storage, and another for configurations. The number of system images that can be stored on the card depends both on the Flash card size and the file size.

The Flash memory card is available in 8-, 16-, or 20-MB densities. The card is an Intel Series 2+ Flash memory card, which conforms with the Personal Computer Memory Card International Association (PCMCIA) format. The Flash memory card that is shipped with the system contains a software image; the same Flash memory card that is ordered as a spare is shipped blank and must be formatted before use. Table 53 provides a description of each Cisco 7500 series Flash memory card along with its corresponding product number.

**Table 53 Cisco 7500 Series Flash Memory Cards**

Description	Product Number
8-MB Flash memory card (default, shipped with RSP)	MEM-RSP-FLC8M
8-MB Flash memory card (spare)	MEM-RSP-FLC8M= <sup>1</sup>
16-MB Flash memory card (installed in system)	MEM-RSP-FLC16M
16-MB Flash memory card (spare)	MEM-RSP-FLC16M= <sup>1</sup>
20-MB Flash memory card (installed in system)	MEM-RSP-FLC20M
20-MB Flash memory card (spare)	MEM-RSP-FLC20M= <sup>1</sup>

1. Spares are shipped blank and unformatted.

## Interface Processors

Interface processors for the Cisco 7500 series are described in the chapter “Interface Processors and Port Adapters for the Cisco 7000 Family.” Cisco 7500 series interface processors support the following interfaces:

- Fast Ethernet—one or two 100-Mbps port(s)
- Ethernet—two, four, six, or eight 10-Mbps ports\*
- Token Ring—two or four ports
- FDDI—one port: multimode to multimode, single-mode to single-mode, multimode to single-mode, or single-mode to multimode port\*
- HSSI—one port
- Serial—four or eight ports\*
- ATM—one port: E3 coaxial, DS3 coaxial, TAXI multimode, SONET multimode, or SONET single-mode port\*
- POSIP—one port: 155.520 Mbps, OC-3c, single-mode, simplex or duplex
- MultiChannel—one or two channelized ports: T1/PRI; E1/PRI 75 ohm balanced; or E1/PRI 120 ohm balanced
- IBM Channel—Single or dual parallel (bus and tag) channel interface, single or dual ESCON channel interface, or single ESCON channel interface and parallel channel interface port(s)

\* Older versions of these boards may be eligible for the Investment Protection Program (IPP). See the chapter “Interface Processors and Port Adapters for the Cisco 7000 Family.”



## Spare Chassis

Before you order a spare chassis, read the following sections:

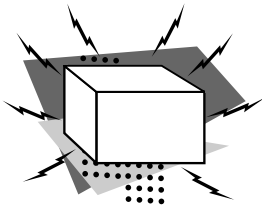
- “Investment Protection Program (IPP)” in the chapter “Interface Processors and Port Adapters for the Cisco 7000 Family”
- “Verifying Interface Processor Compatibility” in the chapter “Configuration Guidelines for the Cisco 7000 Family”

Table 54 lists spare chassis assemblies.

**Table 54 Cisco 7500 Series Chassis Assemblies**

System <sup>1</sup>	Product Number
Cisco 7505 chassis and AC-input power supply. Includes blower, rack-mount kit, and cable management bracket.	CHAS-7505=
Cisco 7505 chassis and DC-input power supply. Includes blower, rack-mount kit, and cable management bracket.	CHAS-7505-DC=
Cisco 7507 chassis and AC-input power supply. Includes blower and rack-mount kit.	CHAS-7507=
Cisco 7507 chassis and DC-input power supply. Includes blower and rack-mount kit.	CHAS-7507-DC=
Cisco 7513 chassis and AC-input power supply. Includes blower and rack-mount kit.	CHAS-7513=
Cisco 7513 chassis and AC-input power supply. Includes blower and rack-mount kit.	CHAS-7513-DC=

1. Each order must include a software feature set.



## Power Supplies

Table 55 provides product numbers for single power supplies ordered as part of an initial system or a spare.

**Table 55 Cisco 7500 Series Single Power Supplies**

Description	Product Numbers
Cisco 7505 AC-input power supply (spare)	PWR/5-AC= <sup>1</sup>
Cisco 7505 DC-input power supply (installed in system)	PWR/5-DC <sup>1</sup>
Cisco 7505 DC-input power supply (spare)	PWR/5-DC= <sup>1</sup>
Cisco 7507 AC-input power supply (installed in system, default)	PWR/7 <sup>2</sup>
Cisco 7507 AC-input power supply (spare)	PWR/7-AC= <sup>2</sup>
Cisco 7507 DC-input power supply (installed in system)	PWR/7-DC <sup>2</sup>
Cisco 7507 DC-input power supply (spare)	PWR/7-DC= <sup>2</sup>
Cisco 7513 AC-input power supply (installed in system, default)	PWR-7513
Cisco 7513 AC-input power supply (spare)	PWR-7513-AC=



Description	Product Numbers
Cisco 7513 DC-input power supply option (installed in system)	PWR-7513-DC
Cisco 7513 DC-input power supply option (spare)	PWR-7513-DC=

1. Same power supply as the Cisco 7010 router and can be used interchangeably.

2. Same power supply as the Cisco 7000 router and can be used interchangeably.

The Cisco 7507 and Cisco 7513 support dual power supplies. (This option is not available for the Cisco 7505.) The optional additional power supply system provides dual load-sharing for protection against system interruption should one power supply system or one source of power fail. Table 56 provides product numbers for dual power supplies that are ordered as part of an initial system.

**Note** Dual power supplies must both be AC-input or DC-input. The router does not support mixed power supply types.

**Table 56 Cisco 7507 and Cisco 7513 Dual Power Supplies**

Description	Product Numbers
Cisco 7507 dual AC-input power supply	PWR/7/2 <sup>1</sup>
Cisco 7507 dual DC-input power supply	PWR/7/2-DC <sup>1</sup>
Cisco 7513 dual AC-input power supply	PWR-7513/2
Cisco 7513 dual DC-input power supply	PWR-7513/2-DC

1. Same power supply as the Cisco 7000 series router.

For international spare AC-input power supply orders, Cisco uses country-specific product numbers, which specify the type of power cord to be included in the order. Table 57 provides international spare power supply product numbers.

**Table 57 Cisco 7500 Series International Spare AC-input Power Supplies**

System	Country	Product Number
Cisco 7505	Australia	PWR/5-ACA= <sup>1</sup>
	Europe	PWR/5-ACE= <sup>1</sup>
	Italy	PWR/5-ACI= <sup>1</sup>
	United Kingdom	PWR/5-ACU= <sup>1</sup>
	USA	PWR/5-AC= <sup>1</sup>
Cisco 7507	Australia	PWR/7-ACA= <sup>2</sup>
	Europe	PWR/7-ACE= <sup>2</sup>
	Italy	PWR/7-ACI= <sup>2</sup>
	United Kingdom	PWR/7-ACU= <sup>2</sup>
	USA	PWR/7-AC= <sup>2</sup>

System	Country	Product Number
Cisco 7513	Australia	PWR-7513-ACA=
	Europe	PWR-7513-ACE=
	Italy	PWR-7513-ACI=
	United Kingdom	PWR-7513-ACU=
	USA	PWR-7513-AC=

1. Same power supply as the Cisco 7010 router and can be used interchangeably.
2. Same power supply as the Cisco 7000 router and can be used interchangeably.

## Spare Accessories

Several spare accessories are available for the Cisco 7500 series: a rack-mount kit, cable-management bracket, packing material, fans, air filter, and LED board. Table 58 lists spare accessories.

**Table 58 Cisco 7500 Series Accessories**

Product	Description	Cisco 7505 Product Number	Cisco 7507 Product Number	Cisco 7513 Product Number
Rack-mount kit	Standard EIA 19-inch rack-mount kit, spare	ACS/5-RMK=	ACS-RMK=	ACS-RMK=
Cable-management bracket	Cable-management system, spare	ACS/5-CBLM=	–	ACS-7513CBLM=
Spare packaging	Spare packaging material	PKG/5=	PKG/7=	PKG-7513=
Fan assembly	Fan or blower assembly	MAS/5-FAN=	MAS/7-FAN=	MAS-7513FAN=
Air filter	Air filter for fan assembly	–	ACS/7-FILTER=	–
LED board	Spare LED board	–	MAS/7-LED=	–

## Software Options

This section describes Cisco IOS software feature sets for the Cisco 7500 series. With feature sets, you can order software combinations that support your particular application. Optional licenses expand the feature sets by providing WAN packet protocol and interdomain routing. To order, select one feature set (there is no default) and one or both of the optional feature licenses.

For details about how to order Cisco 7500 series software updates and upgrades, see the section “Software Ordering Examples” in the chapter “Cisco IOS Software.”

Table 59 list the feature sets for Cisco IOS Release 11.1, Table 60 lists the feature sets for Cisco IOS Release 11.0, Table 61 lists feature set product numbers, Table 62 lists optional feature set licenses and their product numbers, and Table 63 lists feature set upgrade product numbers.

**Note** For the HSA feature to operate properly, you need Cisco IOS Release 11.1(2) or later and ROM monitor Version 11.1(2) or later. This Cisco IOS release and ROM monitor version enable the Cisco 7507 or Cisco 7513 to use the HSA feature, which supports two simultaneous RSP2s. One RSP2 operates as the system *master* and the other RSP2 operates as the system *slave*, which takes over if the master RSP2 fails. HSA is supported by any feature set that supports VIP.

Both RSP2s require the same ROM monitor version, the same Cisco IOS release, and the same DRAM configuration.

If you need to order a ROM monitor upgrade, order product number ROMMON-RSP2=.

**Table 59 Cisco IOS Release 11.1 Feature Sets—Cisco 7500 Series**

Category	IP Routing	IP/IPX Routing and IBM <sup>1</sup>	Desktop and IBM	Enterprise <sup>1</sup>
LAN support	IP, transparent and translational bridging <sup>2</sup> , concurrent routing and bridging <sup>3</sup> , multiring, LAN extension host, GRE	IP, transparent and translational bridging <sup>2</sup> , concurrent routing and bridging <sup>3</sup> , multiring, LAN extension host, GRE, Novell IPX	IP, transparent and translational bridging <sup>2</sup> , concurrent routing and bridging <sup>3</sup> , multiring, LAN extension host, GRE, Novell IPX, AppleTalk 1 and 2, DECnet IV	IP, transparent and translational bridging <sup>2</sup> , concurrent routing and bridging <sup>3</sup> , multiring, LAN extension host, GRE, Novell IPX, AppleTalk 1 and 2, DECnet IV, DECnet V, OSI, XNS, Banyan VINES, Apollo Domain
WAN services	HDLC, PPP <sup>4</sup> , ISDN <sup>5</sup>	HDLC, PPP <sup>4</sup> , ISDN <sup>5</sup> , IPXWAN 2.0	HDLC, PPP <sup>4</sup> , ISDN <sup>5</sup> , IPXWAN 2.0	HDLC, PPP <sup>4</sup> , ISDN <sup>5</sup> , IPXWAN 2.0
WAN optimization	Header, link and payload compression <sup>6</sup> , dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing <sup>7</sup> , weighted fair queuing <sup>7</sup> , snapshot routing	Header <sup>8</sup> , link and payload compression <sup>6</sup> , dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing <sup>7</sup> , weighted fair queuing <sup>7</sup> , snapshot routing	Header <sup>8</sup> , link and payload compression <sup>6</sup> , dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing <sup>7</sup> , weighted fair queuing <sup>7</sup> , snapshot routing	Header <sup>8</sup> , link and payload compression <sup>6</sup> , dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing <sup>7</sup> , weighted fair queuing <sup>7</sup> , snapshot routing
IP routing	RIP, RIPv2, IGRP, Enhanced IGRP, OSPF, PIM, NHRP, policy-based routing	RIP, RIPv2, IGRP, Enhanced IGRP, OSPF, PIM, NHRP, policy-based routing	RIP, RIPv2, IGRP, Enhanced IGRP, OSPF, PIM, NHRP, policy-based routing	RIP, RIPv2, IGRP, Enhanced IGRP, OSPF, PIM, NHRP, policy-based routing, ES-IS, IS-IS
Other routing	—	IPX RIP, NLSP	IPX RIP, NLSP, RTMP, AURP, SMRP	IPX RIP, NLSP, RTMP, AURP, SMRP, SRTP
Management	AutoInstall, SNMP, RMON events and alarms <sup>9</sup> , Telnet, automatic modem configuration <sup>10</sup>	AutoInstall, SNMP, RMON events and alarms <sup>9</sup> , Telnet, automatic modem configuration <sup>10</sup>	AutoInstall, SNMP, RMON events and alarms <sup>9</sup> , Telnet, automatic modem configuration <sup>10</sup>	AutoInstall, SNMP, RMON events and alarms <sup>9</sup> , Telnet, automatic modem configuration
Security	Access lists, extended access lists, access security, TACACS+, RADIUS, MD5 routing authentication, Lock and Key	Access lists, extended access lists, access security, TACACS+, RADIUS, MD5 routing authentication, Lock and Key	Access lists, extended access lists, access security, TACACS+, RADIUS, MD5 routing authentication, Lock and Key	Access lists, extended access lists, access security, TACACS+, RADIUS, MD5 routing authentication, Lock and Key, Kerberized login

Category	IP Routing	IP/IPX Routing and IBM <sup>1</sup>	Desktop and IBM	Enterprise <sup>1</sup>
IBM support	–	SRB/RSRB, SRT, DLSw+ <sup>11</sup> , SNA and NetBIOS WAN optimization via local acknowledgment, caching and filtering, SDLC integration, SDLC-to-LAN conversion (SDLLC), SDLC transport (STUN), Frame Relay SNA Support (RFC 1490), QLLC, NetView Native Service Point, BAN for SNA Frame Relay Support	SRB/RSRB, SRT, DLSw+ <sup>11</sup> , SNA and NetBIOS WAN optimization via local acknowledgment, caching and filtering, SDLC integration, SDLC-to-LAN conversion (SDLLC), SDLC transport (STUN), Frame Relay SNA Support (RFC 1490), QLLC, NetView Native Service Point, BAN for SNA Frame Relay Support	SRB/RSRB, SRT, DLSw+ <sup>11</sup> , SNA and NetBIOS WAN optimization via local acknowledgment, caching and filtering, SDLC integration, SDLC-to-LAN conversion (SDLLC), SDLC transport (STUN), Frame Relay SNA Support (RFC 1490), BAN for SNA Frame Relay Support, TG/COS, QLLC, NetView Native Service Point Downstream PU Concentration (DSPU)
		Optional <sup>12</sup> : APPN		Optional <sup>12</sup> : APPN
VIP and HSA <sup>13</sup> support	Use VIP software product numbers specified in Table 61	Use VIP software product numbers specified in Table 61	Use VIP software product numbers specified in Table 61	Use VIP software product numbers specified in Table 61
VIP2 <sup>14</sup>	Use VIP2 software product numbers specified in Table 61	Use VIP2 software product numbers specified in Table 61	Use VIP2 software product numbers specified in Table 61	Use VIP2 software product numbers specified in Table 61

1. Also available with APPN for Cisco IOS Release 11.1. Use the product numbers that specify APPN in Table 61.

2. See the category “IBM Support” for information about source-route bridging (SRB).

3. The concurrent routing and bridging feature only applies to transparent bridging, not SRB.

4. PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, and PPP compression.

5. ISDN support includes calling line identification (ANI), X.25 over the B channel, ISDN subaddressing, and applicable WAN optimization features. Asynchronous ISDN Access (V.120) is only supported in the Enterprise feature set.

6. X.25 and Frame Relay payload compression.

7. Not currently supported on SMIP or MIP cards. Will be supported in future Cisco IOS releases.

8. IPX header compression (RFC 1553) is available in Cisco IOS Release 11.1(1) and later.

9. Supported on all interfaces.

10. Supported in all feature sets for Cisco IOS Release 11.1(2). Supported only in Enterprise for Cisco IOS Release 11.1(1).

11. DLSw+ over TCP/IP is supported.

12. “Optional” means separate Cisco IOS feature sets: IP/IPX/IBM base/APPN and Enterprise/APPN.

13. HSA supported with Cisco IOS Release 11.1(2) or later.

14. VIP2 requires Cisco IOS Release 11.1(472) or later.

**Table 60 Cisco IOS Release 11.0 Feature Sets—Cisco 7500 Series**

Category	IP Routing	IP/IPX Routing and IBM <sup>1</sup>	Desktop and IBM	Enterprise <sup>1</sup>
LAN support	IP, transparent and translational bridging <sup>2</sup> , concurrent routing and bridging <sup>3</sup> , multiring, LAN extension host, GRE	IP, transparent and translational bridging <sup>2</sup> , concurrent routing and bridging <sup>3</sup> , multiring, LAN extension host, GRE, Novell IPX	IP, transparent and translational bridging <sup>2</sup> , concurrent routing and bridging <sup>3</sup> , multiring, LAN extension host, GRE, Novell IPX, AppleTalk 1 and 2, DECnet IV	IP, transparent and translational bridging <sup>2</sup> , concurrent routing and bridging <sup>3</sup> , multiring, LAN extension host, GRE, Novell IPX, AppleTalk 1 and 2, DECnet IV, DECnet V, OSI, XNS, Banyan VINES, Apollo Domain
WAN services	HDLC, PPP <sup>4</sup> , ISDN <sup>5</sup>	HDLC, PPP <sup>4</sup> , ISDN <sup>5</sup> , IPXWAN 2.0	HDLC, PPP <sup>4</sup> , ISDN <sup>5</sup> , IPXWAN 2.0	HDLC, PPP <sup>4</sup> , ISDN <sup>5</sup> , IPXWAN 2.0

Category	IP Routing	IP/IPX Routing and IBM <sup>1</sup>	Desktop and IBM	Enterprise <sup>1</sup>
WAN optimization	Header, link and payload compression <sup>6</sup> , dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing, weighted fair queuing, snapshot routing	Header, link and payload compression <sup>6</sup> , dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing, weighted fair queuing, snapshot routing	Header, link and payload compression <sup>6</sup> , dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing, weighted fair queuing, snapshot routing	Header, link and payload compression <sup>6</sup> , dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing, weighted fair queuing, snapshot routing
IP routing	RIP, IGRP, Enhanced IGRP, OSPF, PIM, NHRP, policy-based routing	RIP, IGRP, Enhanced IGRP, OSPF, PIM, NHRP, policy-based routing	RIP, IGRP, Enhanced IGRP, OSPF, PIM, NHRP, policy-based routing	RIP, IGRP, Enhanced IGRP, OSPF, PIM, NHRP, policy-based routing, ES-IS, IS-IS
Other routing	–	IPX RIP, NLSP	IPX RIP, NLSP, RTMP, AURP, SMRP	IPX RIP, NLSP, RTMP, AURP, SMRP, SRTP
Management	AutoInstall, SNMP, Telnet	AutoInstall, SNMP, Telnet	AutoInstall, SNMP, Telnet	AutoInstall, SNMP, Telnet
Security	Access lists, extended access lists, access security, TACACS+, MD5 routing authentication	Access lists, extended access lists, access security, TACACS+, MD5 routing authentication	Access lists, extended access lists, access security, TACACS+, MD5 routing authentication	Access lists, extended access lists, access security, TACACS+, MD5 routing authentication
IBM support	–	SRB/RSRB, SRT, DLSw+ <sup>7</sup> , SNA and NetBIOS WAN optimization via local acknowledgment, caching and filtering, SDLC integration, SDLC-to-LAN conversion (SDLLC), SDLC transport (STUN), Frame Relay SNA Support (RFC 1490), QLLC, NetView Native Service Point	SRB/RSRB, SRT, DLSw+ <sup>7</sup> , SNA and NetBIOS WAN optimization via local acknowledgment, caching and filtering, SDLC integration, SDLC-to-LAN conversion (SDLLC), SDLC transport (STUN), Frame Relay SNA Support (RFC 1490), QLLC, NetView Native Service Point	SRB/RSRB, SRT, DLSw+ <sup>7</sup> , SNA and NetBIOS WAN optimization via local acknowledgment, caching and filtering, SDLC integration, SDLC-to-LAN conversion (SDLLC), SDLC transport (STUN), Frame Relay SNA Support (RFC 1490), TG/COS, QLLC, NetView Native Service Point Downstream PU Concentration (DSPU)
Optional <sup>8</sup> : APPN				Optional <sup>8</sup> : APPN

1. Also available with APPN for Cisco IOS Release 11.0. Use the product numbers listed in Table 61.

2. See the category “IBM Support” for information about source-route bridging (SRB).

3. The concurrent routing and bridging feature only applies to transparent bridging, not SRB.

4. PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, and PPP compression.

5. ISDN support includes calling line identification (ANI), X.25 over the B channel, ISDN subaddressing, and applicable WAN optimization features.

6. X.25 payload compression. Frame Relay payload compression was first supported in Cisco IOS Release 11.0(4).

7. DLSw+ over TCP/IP is supported.

8. “Optional” means separate Cisco IOS feature sets: IP/IPX/IBM base/APPN and Enterprise/APPN, as described in Table 61.

**Table 61 Cisco IOS Software Product Numbers—Cisco 7500 Series**

Description	Cisco IOS Release 11.1	Cisco IOS Release 11.0	Cisco IOS Release 10.x
Enterprise	SF-G75A-11.1.x <sup>1</sup> SW-G75A-11.1.x=	SF-G75A-11.0.x <sup>1</sup> SW-G75A-11.0.x=	SF-G75A-10.3.x <sup>1</sup> SW-G75A-10.3.x=
Enterprise, VIP/VIP <sup>2</sup>	SF-G75AV-11.1.x	–	–
Enterprise, APPN <sup>3</sup>	SF-G75AN-11.1.x SW-G75AN-11.1.x=	SF-G75AN-11.0.x SW-G75AN-11.0.x=	–
Enterprise, APPN, VIP/VIP <sup>2</sup>	SF-G75ANV-11.1.x	–	–

Description	Cisco IOS Release 11.1	Cisco IOS Release 11.0	Cisco IOS Release 10.x
Desktop, IBM	SF-G75BS-11.1.x SW-G75BS-11.1.x=	SF-G75BS-11.0.x SW-G75BS-11.0.x=	SF-G75BS-10.3.x SW-G75BS-10.3.x=
Desktop, IBM, VIP/VIP2 <sup>2</sup>	SF-G75BSV-11.1.x	—	—
IP/IPX, IBM	SF-G75DS-11.1.x SW-G75DS-11.1.x=	SF-G75DS-11.0.x SW-G75DS-11.0.x=	SF-G75DS-10.3.x SW-G75DS-10.3.x=
IP/IPX, IBM, VIP/VIP2 <sup>2</sup>	SF-G75DSV-11.1.x	—	—
IP/IPX, IBM, APPN	SF-G75DSN-11.1.x SW-G75DSN-11.1.x=	SF-G75DSN-11.0.x SW-G75DSN-11.0.x=	—
IP/IPX, IBM, APPN, VIP/VIP2 <sup>2</sup>	SF-G75DSNV-11.1.x	—	—
IP only	SF-G75C-11.1.x SW-G75C-11.1.x=	SF-G75C-11.0.x SW-G75C-11.0.x=	SF-G75C-10.3.x SW-G75C-10.3.x=
IP, VIP/VIP2 <sup>2</sup>	SF-G75CV-11.1.x	—	—

1. Where x represents the current maintenance release number.

2. VIP2 requires Cisco IOS Release 11.1(472) or later.

3. See “DRAM Guidelines” in the chapter “Configuration Guidelines for the Cisco 7000 Family.”

**Table 62 Cisco IOS Release 11.0 Feature Licenses—Cisco 7500 Series**

Category	Features	Product Number
WAN packet protocols	X.25, X.25 switching, Frame Relay, SMDS, Frame Relay switching, Switched 56, ATM DXI, SMDS over ATM	FR-WPP75, FR-WPP75=
Interdomain routing <sup>1</sup>	BGP, EGP for Internet scale routing	FR-IR75, FR-IR75=
VIP/VIP2 <sup>2</sup> support	Enables VIP or VIP2 board to run Cisco IOS kernel and DSW	VIPIOS/DSW <sup>3</sup>
CIP support <sup>4</sup>	TCP/IP offload feature for CIP	FR-CIP-TCPOFF, FR-CIP-TCPOFF=
	SNA support feature for CIP SNA	FR-CIP-CSNA, FR-CIP-CSNA=

1. Interdomain routing is automatically included with all Cisco 7000 series RPs with 16-MB RAM. However, this option is appropriate for all other Cisco 7000 and 7500 series system processors.

2. VIP2 requires Cisco IOS Release 11.1(472) or later.

3. Any order for a VIP or VIP2 board automatically includes this software at no extra charge. Remember to order VIP software product numbers specified in Table 61.

4. Any order for a CIP board must include one or both of the software features. To calculate CIP memory requirements, see the section “CIP Memory Guidelines” in the chapter “Configuration Guidelines for the Cisco 7000 Family.”

**Table 63 Cisco IOS Software Upgrades—Cisco 7500 Series**

<b>Feature Set Upgrade</b>	<b>Product Number</b>
IP to IP/IPX and IBM Base Upgrade	FR75-CDS=
IP to Desktop and IBM Base Upgrade	FR75-CBS=
IP to Enterprise Upgrade	FR75-CA=
IP/IPX and IBM to Desktop and IBM Upgrade	FR75-DSBS=
IP/IPX and IBM to Enterprise Upgrade	FR75-DSA=
Desktop and IBM to Enterprise Upgrade	FR75-BSA=
APPN Upgrade (Cisco IOS Release 11.0)	SW-G75NU-11.0.x=
APPN Upgrade (Cisco IOS Release 11.1)	SW-G75NU-11.1.x=
IP/IPX and IBM and APPN to Enterprise and APPN Upgrade (Cisco IOS Release 11.0)	SW-G75DNNU-11.0.x=
IP/IPX and IBM and APPN to Enterprise and APPN Upgrade (Cisco IOS Release 11.1)	SW-G75DNNU-11.1.x=

